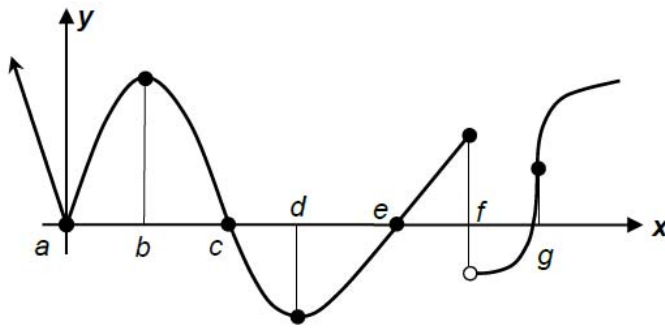


Calculus
Review for Q1 Exam 2

Do Now:

Find the derivative: $g(x) = (\sin x)(4\sqrt{x})$

1. Use the graph below to determine all x -values where the function is **not** differentiable.



2. Find the x -coordinates of all points on the graph of $y = x^3 - 5x^2 - 8x + 9$ at which the tangent line is horizontal.

3. Use the limit definition of a derivative to calculate the derivative of $f(x) = 5 - 2x^2$

4. Find the slope of the tangent line to the graph of the function $y = 5x^2 - 3x$ when $x = -1$

5. Find $h'(x)$ when $h(x) = 4\sqrt{x} + 5 \cos x$

6. Find the $h'(x)$ if $h(x) = (\cos(x))(3x^3 - x^2 + 10x + 2)$.

7. Use the following table to find y' at $x = 1$, if:

$f(1)$	$f'(1)$	$g(1)$	$g'(1)$
3	4	1	-2

$$y = f(x)g(x)$$

8. Find the coordinates of the point(s) where $f(x) = \frac{1}{4}x^4 - \frac{1}{3}x^3 - x^2$ has horizontal tangents.

9. Find $f'(x)$ if $f(x) = 3x^2 \sin x$

Find the slope of the tangent line to the function at the given x-value for each of the following:

10) $f(x) = x^2 + 8x + 16$ when $x = -2$

11) $f(x) = 3x^2 - 4x + 2$ when $x = 2$

12) $f(x) = (3x - 5)(x^2 + 9x)$ when $x = 1$

13) $f(x) = \sqrt{3x-3}$ when $x = 4$ (Use the limit definition)